

MONTHLY WEATHER REVIEW,

APRIL, 1874.

WAR DEPARTMENT,

Office of the Chief Signal Officer,

DIVISION OF

TELEGRAMS AND REPORTS FOR THE BENEFIT OF COMMERCE AND AGRICULTURE.

INTRODUCTORY.

The weather of April has been distinguished by the prevalence of extraordinary rainfall throughout the Southern and Middle States, and equally unusual snows in New England and in Colorado. The courses pursued by the storms have, on the average, been much to the south of their tracks of previous years. The average barometric pressure is unusually high throughout the northern sections of the country. Vegetation is everywhere reported as from ten to twenty days behind its usual condition at the end of the month. Severe floods have been reported from all the tributaries of the Mississippi river, and the result has been that a disastrous overflow has been experienced throughout Mississippi, Louisiana and Arkansas.

STORMS.

I. The history of this storm belongs chiefly to the month of March; it was central on the 1st of April in the South Atlantic States and disappeared during the day in the Atlantic Ocean.

II. The track of this storm is confined to the extreme northern limits and border of the region of our stations; it passed on the 3d of the month over the mouth of the St. Lawrence, after having produced a slight disturbance in the Lower Lake region.

III. This storm first became visible as a well developed depression in Indian Territory on the morning of the 4th, having apparently travelled northeastward from Texas; its course was in a straight line due northeastward over Lake Erie and the Gulf of St. Lawrence, which latter region was reached on the 6th. Very extensive rains uniformly prevailed over the Southern and Atlantic States and snow over the Lake region and Upper Mississippi valley. Dangerous winds prevailed over the Lower Lakes and Middle Atlantic coasts.

IV. This is first located in Texas, where it very possibly may have originated; it moved eastward into Alabama on the 9th, and thence northeastward to the Middle Atlantic coast on the 10th. Severe northerly gales followed in its rear in the Southwest; northeasterly gales preceded its approach to the Atlantic coast; it then passed northeastward at a short distance off the coasts of New England and Nova Scotia, and was east of Cape Sable on the 11th. This was the most generally severe storm of the month on the Atlantic coast, but was on the New Jersey coast perhaps exceeded by that of the 25th instant.

V. The fifth important storm of the month was confined to the extreme northeastern portion of the country. While an area of very high pressure was pressing southeastward over the Northwest and Upper Lake region, the storm in question moved southeast and then northeastward over the St. Lawrence and Canadian Provinces, its effects being most severely felt in New England on the 12th.

VI. The area of high barometer alluded to in the preceding paragraph separated the centres of storms No. V and VI. The latter disturbance apparently passed from the Pacific ocean eastward into the Northwestern Territories and the British Possessions on the 11th, and very quickly produced a rapid fall in the barometer throughout the Northwest, the intensity of the disturbance being increased by the influence of the high barometer over the Lake region. Southwesterly gales prevailed in the Missouri valley at midnight of the 11th, and over the Missouri and Upper Mississippi valleys on the 12th, with fresh southerly winds throughout the entire Southwest. The depression assumed the shape of a trough or extremely elongated ellipse on the morning of the 13th, but the southern extremity rapidly closing up, it became approximately circular by midnight of that date, at which time it was central in southern Wisconsin. Brisk and high southerly winds prevailed during the 13th and 14th successively over Lake Michigan and the Lower Lake region, while the storm-centre pursued a northeasterly course over Canada to the Gulf of St. Lawrence, where it was last observed on the 16th.

VII. This storm first appeared in Indian Territory on the morning of the 14th, its origin having apparently an intimate connection with the storm No. VI, which was at that time in the extreme Northwest. The track of No. VII presents an unusual appearance, in that it trends nearly southeastward and is finally lost in the Gulf of Mexico. It appears to have been broken up into several areas of low pressure, accompanied by numerous local thunder and hail storms throughout the Southern States. The severest winds are reported from the coast of Texas on the 16th and 17th.

VIII. It is not impossible but that this storm, which is first located at midnight of the 17th in the western portion of the Gulf of Mexico, may be in fact identical with No. VII., which latter, after having pursued its unusual course, may have returned upon the usual track of the storms visiting the western Gulf. The course pursued by No. VIII during the 18th was almost due northward into Indian Territory and thence northeastward over the Lower Lake region, over which it passed, on the 20th to Cape Breton, where it disappeared on the 22nd. Strong northeast winds and rain prevailed over the Lake region; easterly winds and heavy rain in the Atlantic States on the 18th, 19th and 20th.

IX. The extensive snows of the 20th, in Colorado and New Mexico, are our earliest indications of the disturbance that culminated on the 22nd in a well-defined storm-centre in Texas, which was by the 22nd central in Tennessee, and was followed by a severe "norther" on the western Gulf coast. The storm disappeared on the 23rd off Cape Hatteras, having been accompanied by very general rains in the Southern States.

X. While the preceding storm was passing eastward, No. X was advancing rapidly southeastward over Manitoba and Dakota, where it was central on the 24th. Considerable rain fell on that and the subsequent day over the Upper Lake region, when the storm turned northeastward and disappeared in Canada.

XI. The cold northerly winds over the Southwestern States on the 23d undoubtedly initiated the extensive precipitation that prevailed on the morning of the 24th through-

out the Northern Gulf coast, developing a well-marked barometric depression that had by midnight progressed northeastward into Alabama. By midnight of the 25th the storm was central in the immediate neighborhood of the coast of New Jersey, and severe easterly gales were then prevailing from that point to Nova Scotia, and continued to precede the advance of the storm throughout the following day. The last position given for this storm-centre was on the morning of the 27th, when it was off the coast of Cape Breton. While the storm was passing eastward from Tennessee on the 25th, there appears to have been formed a subsidiary depression, which passed north and then eastward, uniting with the main centre on the 26th.

XII. This storm appears to have originated in the mountains of Colorado and the neighboring Territories on the 25th and 26th; it was central in Kansas and Nebraska by midnight of the latter date; its advance eastward was, at first, comparatively slow in the presence of areas of high barometer then existing in the Upper Lake region and the South Atlantic States. Heavy rains prevailed on the night of the 27-28th in the Ohio and Tennessee valleys and snow on the Lower Lakes. The storm-centre moved nearly eastward to the Atlantic coast and then turned sharply to the northeast, passing over Maine on the 29th at midnight.

XIII. The history of this remarkable storm belongs especially to the month of May, during the first five days of which it slowly moved from the Northwest to Tennessee and thence to Cape Hatteras. The origin of this storm is to be found on the Pacific coast, as it evidently passed over Washington Territory on the 28th and 29th, and over Montana on the 30th.

BAROMETRIC PRESSURE.

The distribution of barometric pressure for the month is shown by the isobaric lines on chart No. 2, and appears to have been unusually high over the northern sections of the country, with, however, only a very slight deficiency in the extreme southeast.

TEMPERATURE OF THE AIR.

The distribution of temperature for the month is shown by the isothermal lines on the appropriate chart accompanying this text. These lines result from the study of observations reported by about two hundred of the volunteer observers in correspondence with this office, combined with the observations at the regular stations of the Signal Service. The principal feature of the month is the very general low average temperature. This is made specially apparent by collating, as follows, the reports from volunteer stations whose records run back over a long series of years:

In Maine	the average temperature has been the lowest recorded in	38	years.
In Vermont	" " " " " "	24	"
In Massachusetts	" " " " " "	34	"
In New York	" " " " " "	25	"
In Pennsylvania	" " " " " "	20	"
In New Jersey	" " " " " "	9	"
In Connecticut	" " " " " "	20	"
In Maryland	" " " " " "	10	"
In Indiana	" " " " " "	10	"
In Illinois	" " " " " "	23	"
In Kansas	" " " " " "	10	"

PRECIPITATION.

The general distribution of the rain and melted snow is shown by the isohyetal lines on the accompanying chart, in drawing which about two hundred of the volunteer observers' reports have been combined with those of the Signal Service Stations. The rainfall in the Gulf and Atlantic States has been, in general, one of the largest on record; that at Vicksburg, where sixteen inches fell in four days, has been quite without precedent.

As with the rainfall in the South, so with the snowfall in the eastern section of the country, and equally so in the far West.

The snow fall in Maine has varied from 15 to 41 inches.

"	"	in New Hampshire	"	30 to 43	"
"	"	in Vermont	"	33 to 56	"
"	"	in Massachusetts	"	11 to 8	" ?
"	"	in Connecticut	"	12 to 22	"
"	"	in New York	"	10 to 50	"
"	"	in Pennsylvania	"	4? to 38	"
"	"	in Ohio	"	2 to 16	"
"	"	in Indiana	"	2 to 4	"
"	"	in Illinois	"	5 to 11	"

In Colorado 20 inches, and in New Mexico 15, fell in a single storm on the 20th. The total fall in Colorado appears to have varied between 18 and 33 according to the locality of the stations, being entirely without precedent since the settlement of the State in 1857, and producing great destruction among the herds of cattle and sheep, &c.

At the close of the month several inches of snow remained on the ground throughout northern New York and New England, and great drifts in the ravines in Colorado.

WINDS.

The prevailing winds are shown by the arrows on Map No. 2. North and east winds have been unusually frequent throughout the Northeast and Northwest.

Of special instances of severe winds probably those observed at Long Branch on the 25th and 26th were the most unusual. Hourly velocities of 64 and 72 miles were recorded on those dates.

CAUTIONARY SIGNALS.

Reports have been received from 37 stations concerning the justification of Cautionary Storm Signals displayed at those ports. No exact information is at hand with reference to the despatches sent to the Canadian Government. With respect to the Signal Service stations, out of 153 signals displayed at 37 ports, 114 or 75 per cent. have been justified, 33 or 21 per cent not justified, and 6 or 4 per cent. late, while 44 cases are reported in which signals were needed but not displayed.

RIVER FLOODS.

The most notable feature has been the disastrous floods in the Lower Mississippi. The usual spring flood had, during the latter part of March, occasioned considerable damage to the levees near New Orleans, which were being repaired as usual, when the extraordinary rains of April began to make themselves felt throughout Louisiana. The most severe crevasses have been those known as Hickey's, Hushpuckana, the Grand Levee or Morganza, McCullum's, Waterproof, Bonnet Carré, Belle Chasse and Greenwood.

The first and third remained open at the end of the month and must continue so until the waters have subsided enough to allow filling them up; that at McCullum's was closed on the 28th. Through these crevasses and general overflow of the banks of the Mississippi the whole valley of the river has been devastated to such an extent that it is estimated that the loss will be equivalent to one-sixth of the annual produce of the region in question. The highest and lowest water recorded at the Signal Service stations are given in the accompanying table.

HEIGHT OF RIVERS ABOVE LOW WATER MARK.

STATIONS.	HIGHEST.		LOWEST.		STATIONS.	HIGHEST.		LOWEST.	
	DATE.	HEIGHT.	DATE.	HEIGHT.		DATE.	HEIGHT.	DATE.	HEIGHT.
	April.	Feet. Inch.	April.	Feet. Inch.		April.	Feet. Inch.	April.	Feet. Inch.
MISSOURI.					RED RIVER.				
Fort Sully.....	18	3 6	22	1 7	Shreveport.....	30	30 3	15	25 5
Yankton.....	20	11 4	1	5 10	CUMBERLAND.				
Omaha.....	22	7 5	15	3 4	Nashville.....	16	49 2	1	12 2
Plattsmouth.....	22	1 4	18	1 11	OHIO.				
St. Joseph.....	24	6 3	18	2 1	Pittsburgh.....	29	17 1	1	5 11
Leavenworth.....	25	3 11	18	0 4	Marietta.....	30	25 7	3	7 5
Kansas City.....	25	9 3	19	5 10	Cincinnati.....	30	45 0	8	18 8
Lexington.....	25	7 0	18	3 8	Louisville.....	30	19 2	2	8 6
Brunswick.....	26	6 1	16	1 4	Evansville.....	16	37 2	10	12 8
Booneville.....	27	8 9	15	5 7	Paducah.....	26	46 10	7	27 3
Jefferson City.....	22	9 9	4	3 8	ALLEGHENY.				
Hermann.....	23	10 8	16	5 8	Freeport.....	21	8 2	3	1 8†
MISSISSIPPI.					YOUGHIOGHENY.				
St. Paul.....	27	9 0	12	6 2	Confluence.....	29	7 10	2	1 10
La Crosse.....	30	7 6	5	3 3	MONONGAHELA.				
Le Claire.....	30	5 9	2	3 5	Morgantown.....	26	16 2	1	2 11
Dubuque.....	30	10 3	1	6 4	New Geneva.....	26	17 8	1	0 3
Davenport.....	30	7 0	18	4 5	Brownsville.....	11	23 0	7	2 0
Keokuk.....	1	7 8	19	5 5					
Warsaw.....	30	6 8	19	5 8					
St. Louis.....	24	18 11	18	13 1					
Cairo.....	27	47 4	7	33 4					
Memphis.....	30	34 10	6	43 0					
Helena.....	30	43 2	14	40 9					
Vicksburg.....	30	45 8	6	43 0					
New Orleans.....	15	0 7*	30	1 8†					

* Above high water mark.

† Below high water mark.

‡ Below bench mark.

ICE IN RIVERS, LAKES, &c.

The ice is reported to have cleared away on the following dates, so as not to impede navigation at the places named:

On the 3rd, at Gardiner, Me., the Kennebec river having been closed 134 days at Augusta; on the 10th, at St. Paul, Minn.; on the 14th, at Breckenridge, Minn.; on the 16th, at Bangor, Me.; on the 18th, at Buffalo, N. Y.; on the 23d, at Pembina; on the 30th, at Escanaba; and on the 29th, at Rochester, the Erie canal was opened.

TEMPERATURE OF WATER.

The maximum and minimum temperature of the water, in the rivers and harbors, is given in the small table on the Map No. III

FROSTS.

The prevailing cloud and rain of the month have retarded the advance of vegetation to such an extent that the frosts that have been experienced, although severe on early vegetables, appear to have done less damage to fruits than might have been otherwise experienced. Frosts were reported from Texas, Alabama and Virginia on the 10th, and in Illinois and Nebraska on the 21st.; the frosts most extensively felt, however, were those of the mornings of the 29th and 30th. On the former date it was experienced in Missouri, Illinois, Michigan, Ohio, Tennessee, Virginia, New Jersey, and possibly to a slight extent, in Florida; on the 30th frost prevailed very generally over Alabama, Tennessee and West Virginia, and the entire Atlantic States, from northern Florida to New York-

BOTANICAL AND ZOOLOGICAL PHENOMENA.

(1.—VEGETATION.)

From observations too numerous to detail, it appears that on the last day of the month vegetation was very generally backward to the extent of fifteen or twenty days in comparison with the average of former years but had been developing very rapidly during the last two days in the South and especially in the West. The frosts of the month appear in general to have injured only such a proportion of fruit, buds or blossoms, as was beneficial rather than injurious to the remainder of the crop.

(2.—FISHERIES.)

Shad are reported to have first appeared in the Potomac on the 5th and in the Hudson on the 13th.

(3.—THE MIGRATION OF GEESE AND DUCKS.)

The migration northward of wild geese, which is looked upon by many as the sure harbinger of spring, was noted on the following dates:

On the 3rd at Kingston, Massachusetts; 4th at Mt. Desert, Maine; 10th, 11th and 12th at St. Paul; 15th near New York city; 19th at St. Paul, Minnesota; 22nd at New Haven and 29th at Welborn, Florida

LOCAL STORMS.

Local storms, generally of the nature of tornadoes and hail storms, have been reported on the 6th at Memphis and New Madrid; 14th at Cleveland; 15th at Shreveport; 20th at Erie, Pennsylvania; 14th at Fort Gibson, Indian Territory; 7th at Norfolk, Virginia; mid-night of 14-15th at Nashville, Tennessee; 7th at Wilmington, North Carolina; a terrible squall, of the violence of a hurricane, was reported from Halifax on the 10th.

PRAIRIE FIRES.

Numerous prairie fires were reported as seen on the 16th at Breckenridge; 19th at St. Paul.

METEORS.

Remarkably bright meteors were noted on the 3d at Trenton, New Jersey; 13th at Fort Gibson, Indian Territory and Morgantown, West Virginia; 16th at Troy, New York; 18th at Wooster, Ohio; 21st at Augusta, Georgia.

SOLAR AND LUNAR HALOS.

These have been remarkably frequent during the month. The only day on which a lunar halo has not been reported at some one of the three hundred stations was the 5th. The lunar halos most extensively observed were those of the 1st, observed from Nebraska to New York; the 4th, from Virginia to Michigan; the 10th, from New Jersey to Massachusetts; the 22nd, from Georgia to New Jersey; the 23rd, in North and South Carolina; the 24th, over Pennsylvania, New York and New England; the 26th, in Kansas, Minnesota, Mississippi and New York; the 27th, in Michigan, New York and Pennsylvania; the 28th, from Iowa to Maine; the 29th, from Minnesota to Georgia and to Maine.

Solar halos have been observed on about half the days of the month; of these, those especially notable were observed—on the 4th, in Illinois, Iowa and Pennsylvania; on the 5th, in New York and New England; the 13th, from North Carolina to New York and Ohio; the 14th, in Maine, the Middle States and Iowa; the 22nd, in New Jersey, Delaware, Ohio and Indian Territory; the 24th, in Delaware, Pennsylvania, Ohio and Indian Territory; the 28th, in Maine, New York, Ohio and Iowa.

ATMOSPHERIC ELECTRICITY.

(1.—THUNDER STORMS.)

The records of April seem hardly full enough to warrant an attempt at a graphical representation of the distribution of thunder storms. The following list gives, in general, the date of the occurrence of the first thunder storm of the season and occasionally the date of an extremely severe storm: On the 4th, in Kansas; 5th, in Indian Territory; 6th, in Tennessee and Missouri; 7th, in North Carolina, Virginia and New Jersey; 9th, in Virginia; 10th, in New Jersey; 14th, in Tennessee, Ohio and Indian Territory; 15th, in Tennessee and Louisiana; 17th, in Florida; 20th, in Virginia, Ohio, Pennsylvania and New York; 21st, in Virginia and Louisiana; 27th, in Texas; 28th, in Maryland.

(2.—TELEGRAPHIC GROUND CURRENTS.)

The one station reporting the occurrence of the phenomena is Pembina, where it was observed during the 29th.

(3.—AURORAS.)

The most remarkable aurora that has been recorded during this month was that observed on the night of the 7th and morning of the 8th. Details of its observation have thus far been received from over fifty stations, covering the country from Iowa and Dakota on the west, to New Jersey and Maine on the east; this aurora was also well observed at Fort Gibson, I. T. Auroras were also observed at numerous stations on the 1st, 3d, 4th, 5th, 6th, 7th, 8th, 9th, 12th, 13th, 14th, 16th, 28th, 29th.

EARTHQUAKES.

No notices of earthquakes have been reported by the Signal Service or Volunteer Observers, except the reports of Prof. Duprey and others relating to the disturbances at Bald Mountain, in North Carolina, which show that the phenomena in that region have continued and are of the nature of slight concussions, with no traces of volcanic action.

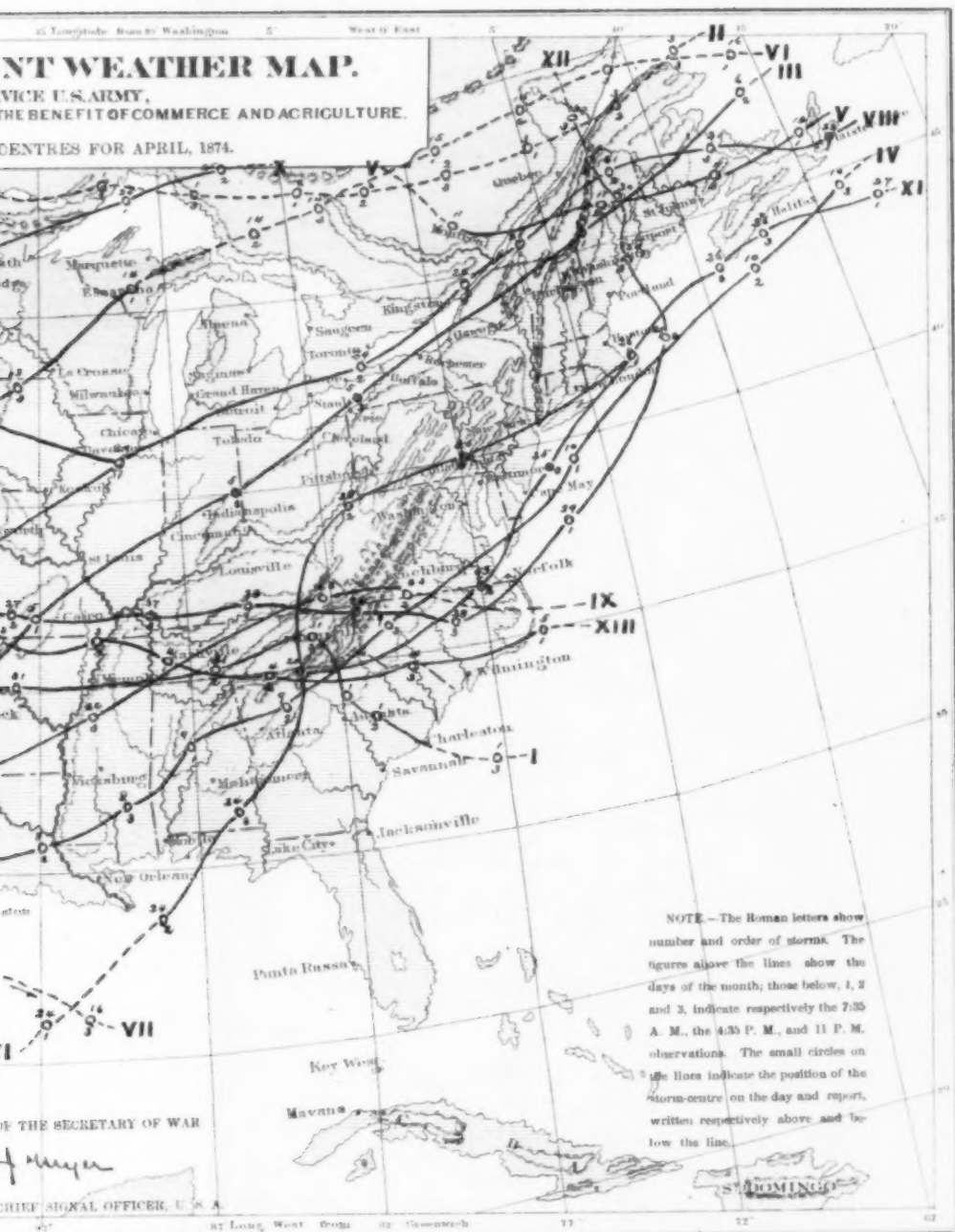
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Albert F. Myer

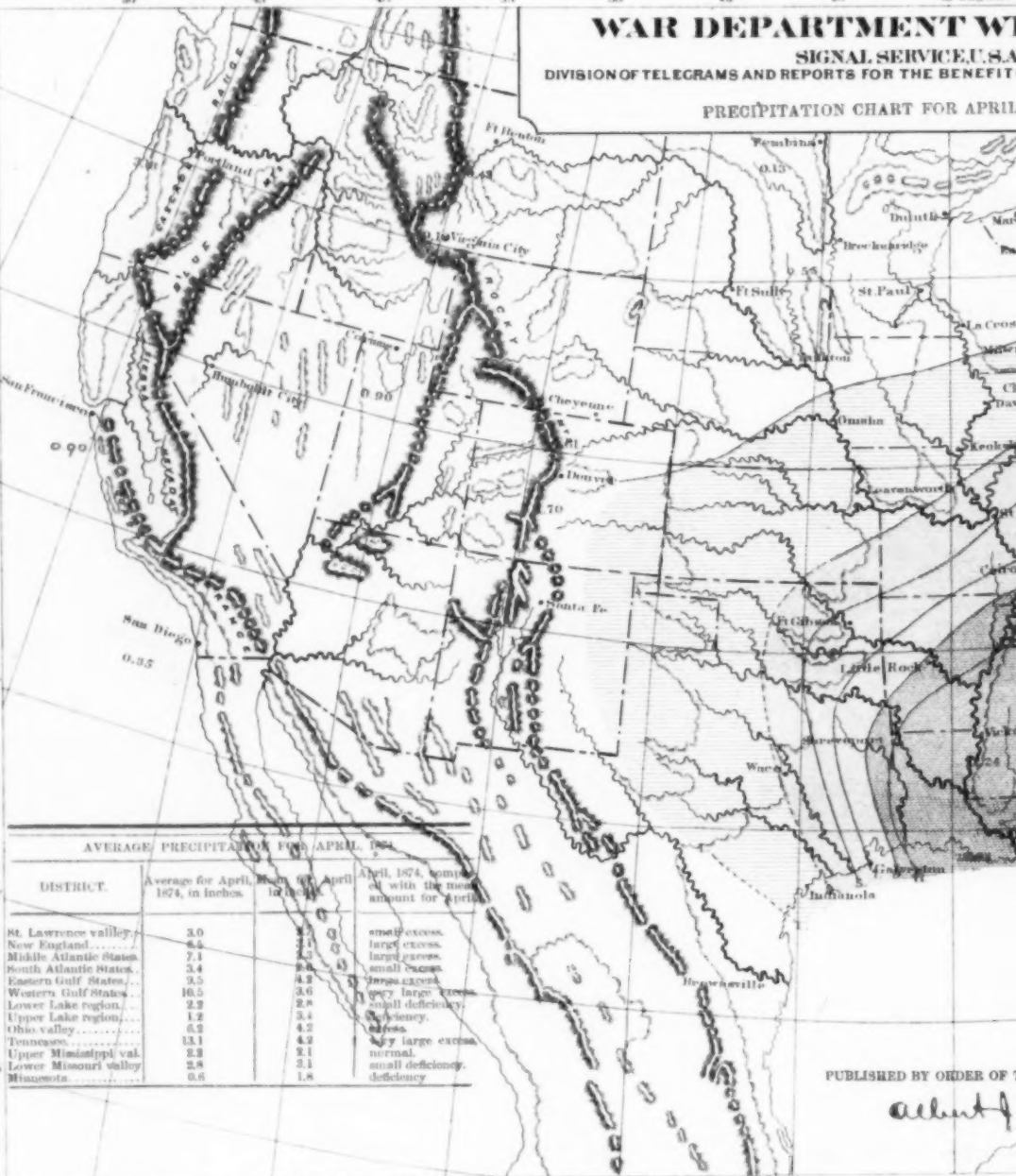
Brig. Gen. (Bvt. Assg^t.) Chief Signal Officer, U. S. A.

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WAR DEPARTMENT
SIGNAL SERVICE U.S.A.
DIVISION OF TELEGRAMS AND REPORTS FOR THE BENEFIT
PRECIPITATION CHART FOR APRIL



AVERAGE PRECIPITATION FOR APRIL, 1904

DISTRICT.	Average for April, 1904, in inches.	Mean for April 1904	April, 1904, compared with the mean amount for April
St. Lawrence valley...	3.0	3.7	small excess.
New England.....	4.4	3.1	large excess.
Middle Atlantic States...	7.1	4.7	large excess.
South Atlantic States...	3.4	3.8	small excess.
Eastern Gulf States...	3.5	4.3	large excess.
Western Gulf States...	16.5	3.6	very large excess.
Lower Lake region...	2.2	2.8	small deficiency.
Upper Lake region...	1.2	3.4	deficiency.
Ohio valley.....	6.9	4.2	large excess.
Tennessee.....	13.1	4.2	very large excess.
Upper Mississippi val.	5.3	2.1	normal.
Lower Mississippi valley	2.4	2.1	small deficiency.
Minnesota.....	0.6	1.8	deficiency.

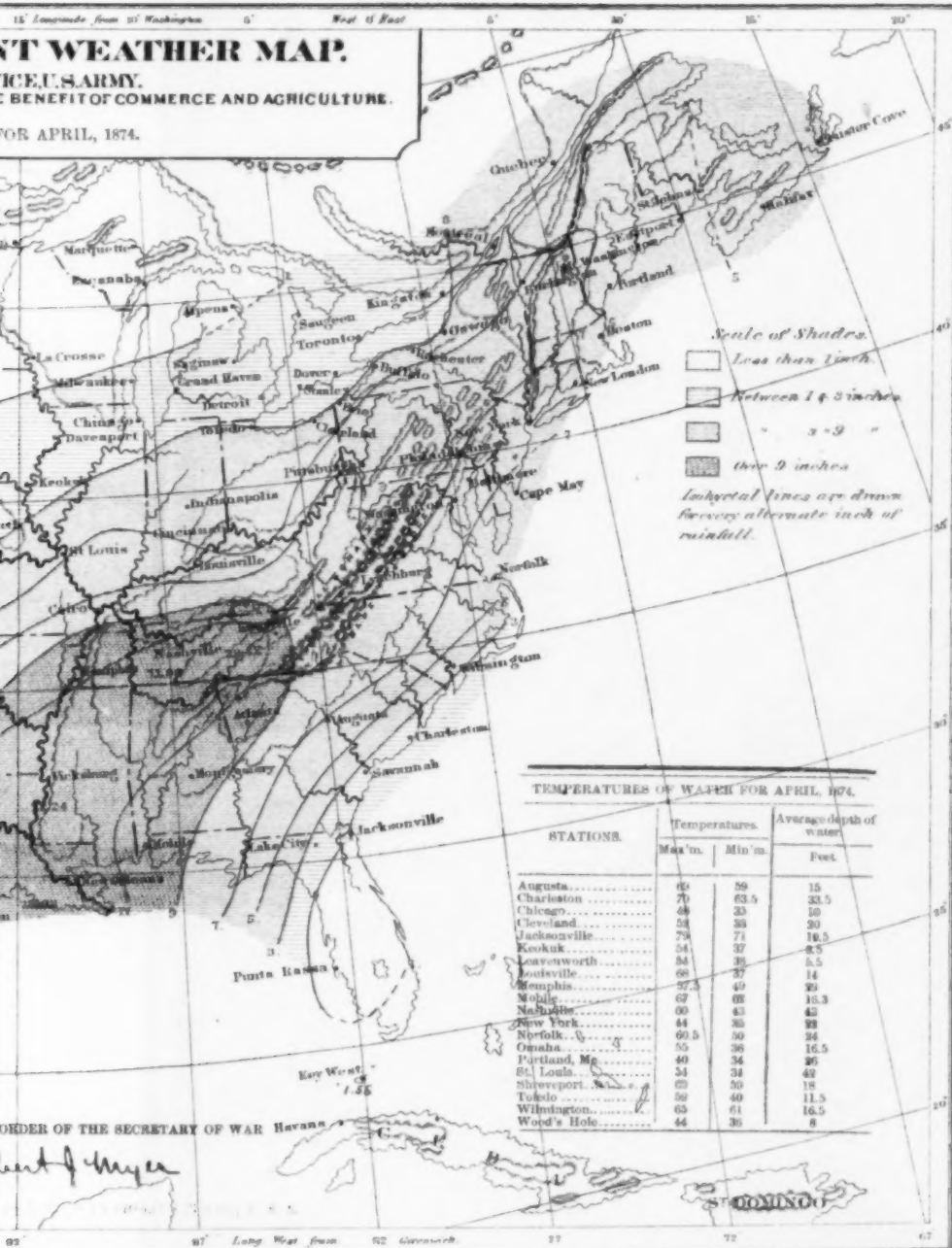
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15° Longitude from 10° Washington 5° West of East 5° 10° 15° 20°

WEATHER MAP.

OFFICE U.S. ARMY.
FOR THE BENEFIT OF COMMERCE AND AGRICULTURE.
FOR APRIL, 1874.





ST WEATHER MAP.
 BY THE U.S. ARMY,
 FOR THE BENEFIT OF COMMERCE AND AGRICULTURE.
 SHOWING WINDS FOR APRIL, 1874.

